ANCHORAGE AMATEUR RADIO CLUB

PRESIDENT- LANCE DUNBAR-AL7BK-337-6297
CLUB PHONE:345-0719

OCTOBER 1986

* *

WHAT'S GOING ON THESE DAYS!!!

* *

OCT 3 . . GENERAL MEETING 7 PM SPENARD REC CENTER 2020 W. 48TH ST

OCT 8 . . BOARD MEETING 7 PM HOPE COTTAGE MEETING RM BERING ST BETWEEN NORTHERN LIGHTS & BENSON

OCT 25 . . PARKA SOCIAL MEETING TBA

NOV 7 . .GENERAL MEETING 7 PM SPENARD REC CENTER 2020 W. 48TH ST

NOV 12 . .BOARD MEETING 7 PM HOPE COTTAGE MEETING RM BERING ST BETWEEN NORTHERN LIGHTS & BENSON

NOV 29 . .PARKA TECH MEETING/ELECTION TBA

DEC 5 . .GENERAL MEETING 7 PM SPENARD REC CENTER 2020 W. 48TH ST

DEC 10 . .BOARD MEETING 7 PM HOPE COTTAGE MEETING RM BERING ST BETWEEN NORTHERN LIGHTS & BENSON

VEC NEWS — NEW HAMS AND UPGRADES

ANCHORAGE

PAMELA S. BRANDON		No License	Technician
MICHAEL J. CURLEY	NL7IN	Technician	Advanced
TIMOTHY S. HOOVER	WL7BKS	Novice	Technician
JOSEPH J. MAY	NL7JD	General	Advanced
EARNEST I. McCLELLAND	WL7AVK	Novice	General
KENNETH J. PAOLINI	NL7IH	Technician	General
HARVEY E. ROOKUS	NL7DK	Technician	General
ADRIAN L. SANDERLIN		No License	General
GENEVIEVE SMITH		No License	Novice
JEROME J. SMITH	WL7BJH	Novice	Technician

FAIRBANKS

JERRY CURRY	KL7EDK	General	Advanced
CHARLES R. RUERUP JR.	WL7BEM	General	Advanced
DAVID R. SALVAGNINI	NL7IU	General	Advanced
LENORA TORGERSON	WL7BJO	Novice	Technician
DAVID B. WALK	WL7BHR	Novice	General

(submitted by Roger Hansen, KL7HFQ, VEC Director)

EDITOR: HARVEY E. ROOKUS - NL7DK 333-4693
3310 CHECKMATE DRIVE
ANCHORAGE, ALASKA 99508

FREZ SEZ -

THE FREZ SEZ WILL RETURN TO THE NEWSLETTER IN THE NEXT ISSUE. WITH THE PRESS OF FLEA MARKET AND HELPING WITH TOWERS ETC WE WILL LOOK FORWARD TO HIS COLUMN NEXT MONTH.

EDITORIAL REMARKS!!!

I AM STILL TRYING TO GET SOME OF THE INTERESTING STORIES AND IDEAS THAT I KNOW YOU HAVE HIDDEN AWAY IN YOUR MINDS. HOW ABOUT 'THERE I WAS OUT ON THE TRAIL--' OR 'OOPS, MY ANTENNA JUST DISINTIGRATED IN THAT LAST BIG WIND'. WE STILL HAVE AN AUTOMATIC TV CAMERA TO GIVE AWAY TO A FAMOUS AUTHOR, WHOEVER YOU MAY BE.

H E L P   H E L P

I NEED A 'VOLUNTEER' TO PUT OUT THE NEWSLETTER FOR JANUARY AS I WILL BE OUT OF THE STATE. IF YOU ARE A WOULD-BE EDITOR GIVE ME A CALL AT 333-4693 FOR DETAILS. A SHORT COURSE WILL BE GIVEN ON 'HOW TO'.

IDITAROD REPORT

IDITAROD RADIO COMMUNICATIONS

The basic concept for radio communications is to use ham radio operators at all checkpoints. The PRIMARY mode of communications is to be by HF radio. The VHF links provided by Alascom are to be secondary channels to be used when HF will not work(Reference telecon with Lee Wareham of Alascom on 8/28/86).

The basic HF station will include all basics needed to communicate on the 3.9 and 7.0 MHz amateur radio bands. This includes the radio, the antenna and the power source. Power can be by battery and generator or can be commercial power in the village.

The basic VHF FM station will include all basics to operate on the 146.0 MHz band. This will include the radio, an 11 element beam (minimum), and at least an 80 watt amplifier. The Alascom technical staff has defined the minimum station requirements for each site and we will adhere to their technical requirements desciption.

The VHF network will vary depending on what part of the trail is requiring communications. For the first part of the race, up to the Rainy Pass checkpoint, the checkpoints will try to transmit back to the Anchorage area repeaters. These stations, where possible(or desireable) will also be equipped for HF communications.

Further down the trail, Alascom will be installing VHF repeaters at Tatalina, Galena, Unalakleet and Nome. These repeaters will be linked back to Anchorage HQ by way of Alascom provided satellite links. Preliminary meetings with Alascom technical staff have already occurred and additional meetings are scheduled during September with Lee Wareham and Tim Pettis of Alascom.

Tim Pettis will provide data defining just which checkpoints will be able to use the satellite links. In most cases there will be a need for 11 element beams and 100 watts VHF amplifiers. Each year these are required and each year they are difficult to obtain. Most people living in Anchorage have no need for these items. As such these items are prime candidates for capital expenditure on the part of I.T.C. These items should be requested as part of the communications support provided by Alascom. Eventually six to eight sets should be obtained for annual use on the trail.

IDITAROD DIGITAL COMMUNICATIONS

PACKET COMMUNICATIONS

This year a new form of data communication will be added to the communications network. "Packet" communications will be used between Anchorage HQ, Wasilla HQ, Montana Creek(site of a primary HF receive station). Fairbanks, Eagle River, Settler's Bay and Knik are also candidates for this mode of communication. To the user, this will provide error free(assumes a good typist) communication between points in a "hard copy" form.

The attached Status Report from the Data Communications Manager will give a more detailed understanding of Packet communications if desired.

NOME TO ANCHORAGE TELETYPE

This year plans call for requesting a teletype circuit from Anchorage HQ to Nome HQ. This calls for a Teletype terminal to be available 24 hours a day over satellite facilities provided by Alascom. This teletype would be controlled by the hams at each HQ but could be typed on by non-hams depending on availability of volunteers and workload at hand. This mode will provide immediate "hard copy" communications between the two Headquarters. Neither radio propagation nor telephone ..dget will affect this mode.

COMPUTER DATA BASE INFORMATION

CONCEPT

Data concerning the mushers must be available to the race officials, the public and the press. This availablitity and usefullness of data is a function of three main processes. First, data acquistion via radio, packet communication, teletype, computer input from villages(if used) and telephone will provide the information that must be input into the data base. Second, there must be data management to assure integrity and format of data for I.T.C. race officials. Third, there must be data distribution for use by the public and the media.

Data Acquistion

This step in the process is the most visible and perhaps the most costly step. Hams will be sent to the checkpoints. The data from the checkers will be relayed to HQ stations. Hams will use HF, VHF, VHF via satellite, Packet, Teletype and possibly telephones. Village schools will enter data to the system if technical and logistical details can be worked out. People, radios and computer equipment must be moved around the state to accomplish the task.

Data Management

All this data must get to the HQ staff in a timely manner. At the HQ computers will be used to store and manipulate the data. Suitable computer software must be available. This data must be accurate for the use of the staff of the race, the welfare of the racers and for the use of the public. Data entry must be controlled. If the entry of data by other than HQ staff would possibly violate the quality of the data base, then schools may not be allowed to enter race data directly. Perhaps not at all.

Data Distribution

The three main ways to get data to the public include use of the Digital Equipment Corporation computer facilities, the DECtalk phones, and Alascom ONLINE service through AlaskaNet. Details are yet to be determined. Special attention will be necessary to assure adequate access for the media.

Data will be manipulated on the HQ computer and then downloaded to the DEC and Alascom facilities.

Summary

Last year there was an attempt to move from using HAMs at checkpoints to using data communications supplied by the schools in the villages. HAMs were to be used only at remote checkpoints. This year the current plan calls for HAMs at each checkpoint. HAMs have supported the Iditarod race for many years and have in fact become a part of the race. In the words of last year's communications manager, "there was a very gratifying response from the HAMs to our last minute call for help. It might be felt that this proves that HAM radio is indispensible. Rather, it proved that it is reliable...". The use of HAMs on the trail is supported by Alascom's actions to build and install repeater/satellite links at Tatalina, Galena, Unalakleet and Nome. Alascom has also supported data communications. Digital Equipment Corporation and Apple Computer also support data communication. There is no reason not to ease into using data communications and HAM radio together.

One premise is that the computer volunteers and the HAMs should/must be located at the same location. It would do very little good to isolate the HAM from the computer volunteers. There needs to be a combined and concerted effort on all volunteers part to be on the same team. The efforts of Nome Beltz High School in the area of data communication is being evaluated to see how it might fit into the communications scheme. Contact has been made with Dave Eskeldson in Nome and Al Rice in Fairbanks. If data communications can be made to be reliable it will be used, but perhaps it would be best to not exclude the HAMs.

There are plans to do a data communications test in the form of a simulated Iditarod race. This needs to be done soon; perhaps even before the December Board meeting. If the simulation can not be successfully run by mid-January, the use of data communications in the race would be limited by the need for reliability. Only time will tell on this.

Final Thoughts

There is hope. Each person who discusses communications has his own idea on what should happen. The communications job has grown. Technology has has tempted us with new ways to do things. HAMs on the trail has worked in the past and will work in the future. Computers can be made to work. Computers must be used at Headquarters and in Anchorage as a minimum. However, if simpler techniques "do the job" there may be no need to computerize everything and complicate the communications job further than is really necessary.

James H. Larsen
Communications Manager

Ken Slauson
Data Communications
Manager

Steve Wilcox
Radio Communicaions
Manager

YL POINT OF VIEW

WELL, NOW THAT SUMMER IS OVER AND THE KIDS ARE BACK IN SCHOOL, WE HAVE MORE TIME FOR HAMMING - MAYBE? CODE PRACTICE AND UPGRADING. STATE FAIR IS OVER AND SPEAKING OF THE STATE FAIR, I SET UP MY 2 METER RIG AT THE BOOTH FOR THE S.O.M.E. RUN FOR THE STATE TROOPERS WITH ART-KL7SK OUT ON THE ROAD WITH THE TROOPERS. I PUT UP A NEW DIPOLE - CENTER FEED ZEPP AND IT WORKS ALOT BETTER THAN MY REGULAR 80 METER DIPOLE. THANKS TO GENE-KL7GID WHO WORKED ON IT WITH ME. I'M GOING TO MAKE ANOTHER ONE JUST LIKE IT.

IS IT TRUE THAT NO NEWS IS GOOD NEWS? I CAN'T EVEN DIG UP ANY GOOD GOSSIP, EXCEPT THAT SEPTEMBER 27 WAS M-DAY FOR DAVID-KL7EB. ALL THE BEST DAVID AND ANDREA. REMEMBER THE ALAMO, I MEAN THE PARKA NET EVERY THURSDAY AT 9 PM ON 147.30-147.90. LIL-NL7DL IS THINKING OF STARTING A NET ON HF (UPGRADE! UPGRADE!), BUT WILL STILL KEEP THE PARKA NET ON 90/30. 'DID YOU KNOW' THAT AS A NOVICE YOU CAN GET YOUR CALL LETTERS ON YOUR LICENSE PLATE?

NEXT PARKA MEETING WILL BE ON THE LAST SATURDAY OF OCTOBER AT 10 AM. DETAILS LATER.

73'S SHARON-KL7VL

NOVICE CLASSES NOVICE CLASSES

CALL LIL-NL7DL 277-6741 FOR INFORMATION PERTAINING TO OBTAINING A NOVICE CLASS LICENSE

HANDIHAMS HANDIHAMS

HANDIHAM INFORMATION FOR THE HANDICAPPED, BOTH YOUNG AND OLD WHO MAY BE INTERESTED IN BECOMING AMATEUR RADIO OPERATORS. CALL SHARON-KL7VL AT 271-5766 WORK OR 745-4352 HOME OR LIL-NL7DL 277-6741.

Archie

SPECIAL PREFIX

FK25A

NEW CALEDONIA

To commorate the 25th. anniversary of the Amateur Radio Association of New Caledonia, all members of our club will use a special prefix during the period from 9th August to 31st December inclusive.

This prefix will be : FK25

At the same time, and for the same period, the club station will use the call sign : FK25A

In order to allow a maximum number of OM's around the world to qualify for this commorative award, our members have pledged to be on air as often as possible from August through December.

Also the club station will be activated very frequently.

ARANC FK25A Committee.

SPECIAL AWARD

FK25A

NEW CALEDONIA

On the occasion of the 25th. anniversary of A.R.A.N.C. (Amateur Radio Association of New Calédonia) a very attractive commorative award is being printed.

Please find enclosed the conditions for obtaining this award.

We thank you for publicising this award and pass on our most sincere 73's

ARANC FK25A Commitee.

SPECIAL AWARD

FK25A

NEW CALEDONIA

1) Period : from 9th. August untill 31st December 1986 inclusive. Date limit for award application 31st January 1987.

2) All bands, all modes.

For contacts made via Oscar 10, an individual station may be contacted more than once, but 24 hours minimum between QSO's.

3) Conditions :

1) Have made ONE QSO with the Club station FK25A

OR

2) Have made THREE QSO's with stations using the FK25 prefix.

OR

3) Have made QSO's with FIVE stations during the abovementioned period, using any of the following prefixes : FK8 - FK1 - or FKØ.

4) QSL cards not required.

Log extract certified exact by a radio club or two licensed radio amateurs.

5) Award Price.

- 5 IRC's or $US 2,00 (surface mail)
- 8 IRC's or $US 3,00 (airmail)

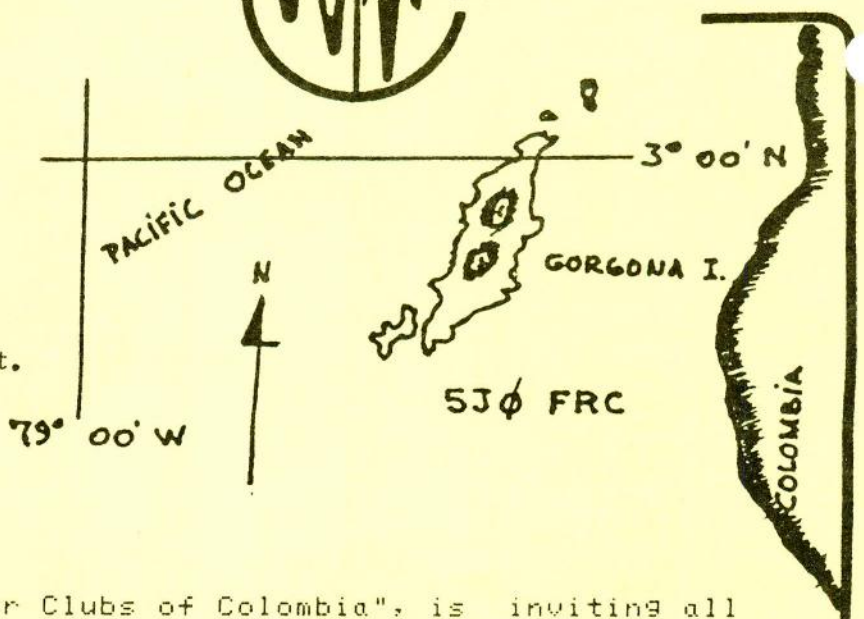
6) Address for Award Applications :

FK25A AWARD MANAGER
P.O. Box 3956
NOUMEA
New Caledonia (South Pacific)

NEWS FOR DXERS

federación de clubes radioaficionados de Colombia

FRACOL



July 29, 1986

Alaska QSL Bureau, 4304 Garfield St.
Anchorage, AK 99503, USA

"FRACOL, Federeted Radio Amateur Clubs of Colombia", is inviting all of you to participate in the DX-pedition to the "Gorgona Island". This Island, located at 3°-00' N and 78°-14' W, used to be a Federal Prision up to last year, when an Ecologycal Center was settled down. The fauna and the flora are just amazing even thought the snakes are so many...

We, at FRACOL, will be doing this DX-pedition to "The Science Island" and will be working 160, 80, 40, 20, 15, and 10 meters bands. Also, we will try to work 2 meters(on 144.440 Mhz FM) with this unique sign: 5JØ FRC, which was assigned only for this very special DX-pedition and to celebrate the Discovery of America by Christopher Columbus in October 12, 1492.

The DX will start on October 11th 00:00 hrs GMT, up to October 12th 23:59 hrs GMT and the call sign: DX-pedition 5JØ FRC. The exchange will be the RS(T) + Numerical order. The addresses: P.O. Box 050177 Medellín, Colombia S.A. or FRACOL, P.O. Box 1767 Bogotá, Colombia,S.A.

Send your QSL Card verifying the contact. Those who contact three or more bands will receive a beautiful color magazine of the "Devil's Island" - As it was called by the prisioners.
All the others will receive a very nice QSL Card.
The deadline will be March 12,1987.

73! and good DX's

RAMON F. DEL CORRAL- HK4 EJO
DX-Manager

JUAN DAVID AGUILAR- HK4 XZ
DX-Secretary

radio club cartagena de indias - radio club área 2 - radio club córdoba - radio club santander - radio club antioquia radio club colombia - radio club de caldas - radio club atlántico - radio club huila - asociación de radioaficionados de barrancabermeja - asociación de radioaficionados de boyacá - Risaralda radio club - radio club general santander asociación de radioaficionados del pacífico - radio club andino - montelibano radio club - radio club palmira - radio club del tolima, y radio club provincia de ocaña. aportados 101.199 y 1767 bogotá.

DX- P.O.Box 050177 Medellín - Colombia - SA

Distributed Capacity Dipoles

B.B. Capers, AL7BB

Ever wish you had the data at hand for a good broadband antenna that performs with little or no maintenance for years, and has a bandwidth that is about 500 kHz wide? Well, the "Distributed Capacity Dipole" might be what you are looking for. I have had a pair of them in use for the past seven years, and they still perform as well today as they did when first inatalled.

I take no credit for this antenna, for it has been around for years, and has been written up in several Ham publications in the past. The information furnished here has been gleaned from these past articles.

First, what is the thing? Well, it is a dipole that is constructed entirely of coaxial cable. It looks like a conventional dipole, however unlike the conventional dipole, it has a bandwidth in the range of 500kHz with a VSWR of less than 2:1 over the entire bandwidth, and since it is constructed from 52 Ohm coax, there is no need for a Balun in order to have a perfect match to the rig.

To construct the antenna, you will need a length of 52 Ohm coax for the antenna portion, and another length for the feed line. RG-58 is my choice for the antenna with RG-213 for the feed line, however any 52 Ohm coax will work. The antenna portion doesn't have to be new, only servicable, however I recommend the feed line be in near-new condition when installed. We don't want an RF leak prior to reaching the radiating element.

To start construction, cut the basic antenna length from the chart for the band desired, and fold it in the middle to have two equal lengths. Now remove one inch of the outer insulation from each side of the center mark for a total distance of two inches. Carefully cut the braid exactly at the center point making sure not to nick the center conductors insulation, and fan the braid out at a 90 degree angle from the cable so as to have two pigtail feed points. The feed line will attach here later.

After making the feed line break-outs, measure from the center of this breakout to the "pin-point" of the antenna, and strip off 1/2 inch of the outer insulation on either side of this pin point for a total length of one inch. Carefully open the braid to expose the center conductor, and using caution, remove a 1/4 to 1/2 inch section of the center insulation. This exposes both the braid and center conductor at the same point. At this point wrap about two or three turns of solid hook-up wire so as to short both these conductors together, and apply a small amount of solder to this joint. Now do the same to the other side of the antenna (make sure you keep the measurments the same for both sides).

For the ends of the antenna, strip off one inch of the outer insulation, and push back the braid. Then remove the center insulation as far back at the pushed back braid. Work the braid back down over the exposed center conductor, and twist the end of a six inch length of bare antenna wire to this prepared end and solder. This gives you a means of attaching the ends to your insulators or halyards. Now as before, do the same to the other side of the antenna.

Now, back to the center of the antenna. At this feed point, attach the coax to your rig by stripping off two inches of the outer insulation from the end of your feed line. Carefully fan the braid to one side, and tightly twist it to form a conductor. From the center conductor, strip off one inch of the insulation and twist the wires tightly. This will give you two individual conductors on the end of your feed line. Attach these conductors to the two breakouts in the center of the antenna by twisting and soldering, making sure not to short the leads or melt the center conductor insulation.

This completes the antenna, but we must seal it from the weather. I have used plastic insulation tape, but find that it weathers quite rapidly, so use RTV Silicone sealant (bathtub caulking) for it cures to a long wearing high dielectric substance. To apply the RTV, put a bead around the joint, and let it set for about 10 minutes, then using a WET finger, smooth the joint so no water or ice can collect on the joint. Make sure that the center breakout is fully covered with the RTV, and that it is not shorted, for once the sealant cures it is hard to remove with out damaging the cables. After this is done, carefully lay the entire antenna aside for at least 12 hours so the sealant can cure before hanging the antenna.

Hang the antenna the same way you would a conventional dipole. If

you hang it horzontialy you will get a bi-directional pattern with maximum radiation off the sides of the antenna, whereas if you drop the ends to no greater than a 45 degree angle as in an inverted Vee you will obtain an onmi-directional radiation pattern.

This is a simple antenna, however it gives several benefits over a conventional dipole. First it gives aproximately a 1.5dB gain over a simple dipole, it is less noisy from static build-up, it reduces harmonic radiation of the operating frequency, and it is almost completely un-affected by the enviroment.

To do the final tuning of the antenna in case it does not give you a VSWR of 1.5:1 or better across the entire band-width of its designed band, it will be necessary to trim the ends a little at a time until an acceptable VSWR is reached (remember to short the center conductor to the shield after each trimming before applying RF to the antenna.

I know that the old addage "one picture is worth a thousand words" holds true in many respects, however I hope these "hundred" words paint a clear picture for construction. If not, please feel free to contact me, and I will attempt to clarify anything that might be a little grey in this article.

			I	I	I I I	I	I
75/80m	120'0"	total	29'6"	30'6"	I	30'6"	29'6"
40m	63'0"	total	14'9"	16'9"	I	16'9"	14'9"
20m	33'6"	total	8'0"	8'9"	I	8'9"	8'0"
15m	22'10"	total	5'10"	5'7"	I	5'7"	5'10"
10m	17'2"	total	4'5"	4'2"	I	4'2"	4'5"

More on PL-259's

Thanks Russ for a fine article On the use of PL-259's. One thing that I find extra useful when putting them on is a small copper tubing cutter. It allows me to make controlled cuts thru the outer jacket, tinned braid, and inner insulation. With a little practice one can make a professional attachment every time.

Bill
AL7BB

NUMBERS TO REMEMBER

TIME WWV - 552-3553

PROPAGATION INFO - 552-2398

A FINE IS A TAX FOR DOING WRONG
A TAX IS A FINE FOR DOING RIGHT

ROSTER UPDATE

GARY RIGDON
17517 KILOANA CT
EAGLE RIVER, AK
WAS NL7GH
NOW AL7IH

CURT HARRIS KL7IUJ
6242 COLLINS WAY
ANCHORAGE, AK 99502

Moose Stew

by Joyce Matzkres

Take one large moose and cut it up in small pieces. This should take about 4 days. Cook it all at 400° degrees in a large pot. This will take another 4 days to cook it. Add a little flour. This should feed 400 people. You may add a rabbit to it if you have more to feed! However, only add the rabbit if really necessary, as no one likes hare in their stew!

. The TAPR software was designed to support two interfacing requirements. The first interface is to the computer or terminal and involves processing commands and assembling data into packets. Also, packets received must be processed and formatted for display back to the computer or terminal. The second interface is the radio interface which provides two different packet communications protocols (AX.25 and the original Vancouver protocols), keying the radio, and sending proper Morse code identification using your call sign. The protocol involves accessing the shared radio channel, formatting and sending packets, receiving and deciphering packets, and filtering out packets not intended for your station.

. The software is implemented on the TAPR board in read only memories (ROM's). 24K of ROM is provided on the board for this purpose, along with 6K of on-board random access memory (RAM).

. The TAPR TNC beta test version sold for $200 - a very low price for such an incredibly well-designed and engineered unit! As mentioned earlier, the initial tests using this board have been most impressive. I'll provide a more detailed description of both the hardware and software components in forthcoming tutorial messages.

HamNet Packet Radio Tutorial - Part Two

by Scott Loftesness W3VS
CompuServe 76703,407

. We'll continue our tutorial on packet radio by reviewing in more detail the hardware and software implemented on the Tucson Amateur Packet Radio (TAPR) Terminal Node Controller (TNC).

. The TAPR TNC is a self-contained, microprocessor-based device intended to act as an intelligent interface between a user's ASCII communcations system (terminal or computer) and radio-based packet communications.

. A 6809 microprocessor acts as the system CPU in the TAPR TNC. The 6809 is readily available and widely accepted for application in dedicated function controllers as well as general purpose low-end computers. It executes the software stored in the system's EPROM's.

. The 6809 has an internal 2-phase clock generator and provides control, address, and data bus input/output for family peripheral devices. It has capabilities for position-independent code and is designed to support multiple stacks, making it very efficient for executing block structured high level languages such as Pascal and Forth. Information on the 6809 architecture is available in Motorola, Hitachi, and AMI literature - and in several books which are widely available in the computer sections of most bookstores.

(HamNet Packet Tutorial Part Two to be continued)

. The serial port is designed to provide a full-duplex RS-232-C interface for the user's terminal or personal computer. Full baud rate selection from 50 baud to 19.2 kilobaud is supported by the port. EIA RS-232-C levels and transition rates are implemented as well. The serial port is controlled by a 6551 LSI UART which contains an internal, software-controlled baud-rate generator. The transmitter and receiver are double-buffered and capable of interrupt-driven operation. The 6551 supports hardware flow control - allowing the terminal or computer to pace input and output from the TNC. 1488 and 1489A devices are used to translate the TTL levels from the 6551 to RS-232-C levels for the port itself.

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. A parallel port is also included on the TAPR board. Although not used for terminal support in the initial releases of the supporting software, it is used for certain status indications. A 6820 is used to provide two 8-bit TTL-level handshaking ports.

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. The system port interfaces to other devices on the TNC itself. These include a non-volatile RAM chip used to store certain of the system parameters across power-downs, DIP switches used for certain reset options, the HDLC controller chip, and an indicator driver interface for a variety of LED-monitored system functions. Implemented using a 6522, the system port also includes timing functions used for HDLC baud rate generation, software timing functions, the CW identification, and on-board calibration of the modem frequencies. The 6522 is a very powerful LSI chip which incorporates a pair of 8-bit programmable I/O ports, four control lines (for handshaking), two 16-bit programmable timers/counters, and an 8-bit shift register. The non-volatile RAM is used to store system parameters that are not normally changed such as call sign, terminal attributes, and timing parameters, but which remain user alterable. This allows configuration changes for a given session only, or on a "permanent" basis. The system port also handles the interface to the radio push-to-talk circuitry.

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. A Western Digital WD1933B HDLC controller is used to implement the HDLC standard bit oriented protocol including CRC check sum and zero bit insertion. The HDLC controller interfaces to an on-board 1200 baud modem providing phase-coherent AFSK modulation (with Bell 202 compatibility) using the EXAR 2206/2211 chips. Also included is the necessary impedance matching circuitry for interface to most popular amateur radio equipment. A 14-second hardware "watchdog" timer is inserted in series with the transmitter push-to-talk line to prevent accidental RF channel lockout which might be caused by a software error.

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. A unique feature of the TNC is the capability for on-board calibration of the modem tone frequencies. This is accomplished using jumpers which allow for the modem to be disconnected from the HDLC chip.

(HamNet Packet Tutorial Part Two to be continued)

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. The on-board memory bank consists of six JEDEC-standard 28-pin "byte-wide" sockets. Three of these sockets are mapped for 2K static RAM's. The other three sockets are mapped as 8K EPROM or static RAM sites. The configuration supports 2716, 2732 and 2764-type EPROM's. A custom memory map PROM is included which provides the address decode for the ROM and RAM chips.
.
. Also included on the TAPR TNC board is a user wire-wrap area - primarily to allow custom interfaces to be developed to support unusual radio interface requirements. Power busses are included in the area so that active devices may be added directly onto the TNC board itself as may be required by the user.
.
. This completes the hardware description of the TAPR TNC. As you can see, it's a very complete design using the latest in LSI chip technology.

HamNet Packet Radio Tutorial - Part Three

by Scott Loftesness W3VS

CompuServe 76703,407

I'm going to continue this series by describing the operation of the Tucson Amateur Packet Radio (TAPR) Terminal Node Controller (TNC) - and the tremendous function which has been implemented in the TNC software will become readily apparent!
.
. The TAPR TNC operates in one of three modes:
. Command Mode
. Converse Mode
. Transparent Mode
.
. Command mode is used to modify various software operating parameters. Converse mode and Transparent mode are both data transfer modes - supporting transmission and reception of packets across the radio link.
.
. Command mode is automatically entered upon power-up or reset of the TNC. It can also be entered from one of the other modes by sending an appropriate control sequence from the terminal to the TNC. For example, if I'm running in Converse mode, I can get to command mode by simply entering a control-C. I can they make any operating mode parameter changes I need to, and return to Converse mode by using the CONVERS command. The flexibility the TNC provides in this regard is really outstanding. You can switch into and out of Command mode very easily - and not lose any data coming across the link.

(HamNet Packet Tutorial Part Three to be continued)

ANCHORAGE AMATEUR RADIO CLUB, INC.
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Anchorage, Alaska 99510-1987
Address Correction Requested

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Anchorage, AK
Permit 223

ROGER HANSEN
2628 TURNAGAIN PKWY
ANCHORAGE, AK 99503